BERMUDA

REPORT

OF THE

DEPARTMENT

OF

AGRICULTURE

FOR THE YEAR

1954

2 - AUG 1955

LITHOGRAPHED BY THE BERMUDA PRESS, LIMITED

BOARD OF AGRICULTURE, 1954

Chairman.

Lt. Col. J. C. Astwood, O.B.E., E.D., M.C.P

Members.

C. Vail Zuill, Deputy Chairman

J. B. Ferguson

Ford Baxter

L. R. Selley

S. John Pye

W. T. Wilson

Abel Benevides

E. H. Simons

H. T. North, M.C.P

H. St. George Butterfield

DEPARTMENT OF AGRICULTURE 1954.

(Civil Service List)

Director of Agriculture	W. R. Evans
Asst. Director of Agriculture	G. R. Groves
Plant Pathologist	I. W. Hughes, B.Sc. (as of 1st July)
Government Veterinary Officer	E. R. Earl, V.S., B.V.Sc.
Horticulturist	C. A. Baker
Agricultural Assistant	C. V. S. Early
Inspector of Produce	T. A. Hollis
Assistant Horticulturist	J. H. Jones
Clerk to Board	Miss C. E. King (as of 15th July)

(Not on Civil Service List)

Marketing Officer	F. C. Hollis
Accountant	Mrs. I. Kellaway (Acting)
Reafforestation Officer	G. S. G. Scott

REPORT OF THE DIRECTOR OF AGRICULTURE

FOR THE YEAR 1954.

To the Chairman, Board of Agriculture:

I have the honour to submit the report of the Director of Agriculture for 1954.

AGRICULTURAL CONDITIONS DURING THE YEAR.

Weather conditions during the crop seasons was the most unfavourable in many years. Periodical draughts during the year coincided largely with the crop seasons, with the result that the fall and spring potato crops were seriously affected, and the harvest proved the most disappointing one over a long period of time. Green truck crops also suffered from the draughts, particularly during March and April, but the damage was not as extensive as in the potato crops.

Prices of farm produce were maintained at a higher level than the previous year, but that was scant compensation for the low yields which occurred with monotonous regularity through a season of unfavourable weather.

The onion crop was not affected by the droughts to any great extent. On the contrary, the dry conditions had a beneficial effect on the ripening process of the bulbs which resulted in better keeping qualities than that experienced in seasons of normal moisture.

AGRICULTURAL STATION.

Field Experiments.

Of the two field experiments commenced five years ago, consisting of fertilizer tests, one on farm crops and the other on bananas, the former was concluded at the end of the summer. On account of unfavourable weather conditions and the pressure of other duties, it was not possible to arrive at definite conclusions with respect to the farm crop experiment. However, the experience gained will be useful in conducting further experiments of this kind, and it might be possible to extend the trials for a further period of time.

During the three year period since the commencement of the banana experiment, very heavy winds were experienced each fall and winter, and in the less sheltered parts of the trial grounds many of the plants were uprooted or shaken so as to make comparisons worthless. However, the experiment is being continued, and if it does not produce tangible results, it is hoped that the experience gained may reveal some useful leads for further trials.

Ornamental Grounds.

During the past six years, the grounds of the Agricultural Station have been completely transformed to meet the growing need for a more attractive atmosphere, consistent with the growth of the tourist industry and the development of botanical surroundings.

The Nerium Oleander, which has for many years been looked upon mainly as a shrub to form hedges to protect growing crops from wind

injury, has in recent times gained prominence as an ornamental plant of great beauty and long flowering habits. "Oleander Hill", a group planting of oleanders, situated west of Montrose House, consisting of forty distinct coloured flowering specimens, has over the past six years captivated the imagination of native Bermudians and visitors to the Colony alike. This large collection of oleanders has undoubtedly added much to the interest of the Agricultural Station, and the fact that this easily propagated native plant of the Orient is adaptable for cultivation in any part of the Colony, will assure it greater prominence in the landscape of the Colony in the years ahead.

Next in prominence in the landscape of the Agricultural Station is the Hibiscus, Rosa chinensis. Grouped in many parts of the sixteen and a half acre lot, embracing the Agricultural Station, experimental and ornamental grounds, are plantings of Hibiscus which, through most seasons of the year, sport flowers of many colours and great beauty. The extensive plantings of this beautiful shrub, now under cultivation at the Agricultural Station, has been achieved by local propagating efforts and introductions from many parts of the world, constitutes one of the largest and most colourful collections of hibiscus grown anywhere in the Islands of the Caribbean.

PLANT DISEASES AND PESTS.

Since the resignation of the Plant Pathologist in April 1950, the Department had to carry on without a substantive holder of the post until 1st July, when Mr. I. W. Hughes was appointed to the position. Fortunately, the Department was able to secure the services of some very able substitutes to fill the breach at irregular intervals, and together with the assistance supplied by the Commonwealth Institute of Biological Control, the situation was kept under control.

The cedar infestation, which has decimated the ranks of the native cedar, Juniperus bermudiana, since 1944, appears to have nearly petered out for some reason or other. The Juniper scale, Carulaspis visci Shrank. is no longer the lethal killer it was in the early stages of the infestation, and there is reason to hope that some of the more robust specimens which have survived the infestation may live and reproduce their kind in years to come. In large areas, in many parts of the Colony, thousands of sapling cedars are appearing amongst the dead skeletons of their ancestors. There is no assurance that these saplings will survive, but at this stage at least they may be regarded as potential assets, worthy of care and attention.

The Nerium Oleander, which following the destruction of the Juniperus bermudiana assumed leadership as a landscaping subject, is now threatened with destruction by two formidable scale insects. The Oleander scale, Pseudalacaspis pentagona Targ., gained prominence as a killer in the Colony thirty-five years ago, but it was successfully checked by the introduction of two parasites, Aphytis diaspidis and Aspidiotiphagus lounsburyi, until recently. During the year under review, the Oleander scale has flashed into prominence once more and for some unknown reason, the ranks of the two former successful parasites have been decimated in numbers to such an extent that they no longer exercise any control over the life of the scale. The second pest, the Green Shield Scale, Pulvinaria psidii Mask is a more recent introduction into the Colony and it was only observed as a menace to the Oleander about five years ago. While not as destructive to the life of the Oleanders as Pseudaulacaspis pentagona, the sooty mould which follows attacks of the scale affects much of its beauty as a landscaping subject and it probably undermines the health of the plant.

The Department and Board of Agriculture view with alarm the threat to the life of the Oleanders, and the Commonwealth Institute of Biological Control has been requested to give priority to the study of these two pests and the means of combating them biologically.

CHEMICAL CONTROL OF WEEDS.

In a country like Bermuda, where the main industry is tourism, it is inevitable that the cost of labour connected with farming and gardening should be disproportionately high. Easter Lily growing is a business which ordinarily requires a great deal of hand weeding, and it is in this connection that the Department has been investigating the possibility of controlling weeds by chemical means. The trials so far undertaken indicate that useful results may be achieved in this field of research and the trials will be continued, using a number of proprietary herbicides and the amine salt of 2·4-D, in an attempt to clear the way for a positive programme of weed control.

YELLOWING OF LILIES.

A peculiar condition, that of yellowing (Chlorosis) of lilies, has been noticed in different parts of the Colony for many years, but not until 1953 was the cause of the yellowing established. During this year, Mr. Alan Dustan, a scientist temporarily employed in the Department established the fact that the yellowing was due to the absence of iron in the soil in available form. It has now been discovered that this condition can be corrected by application of chelated iron in dust form over the surface of the plantings in the early stages of growth, wherever the deficiency is present. It has been fairly well established that under Bermuda conditions chlorosis can be corrected in three or four weeks by the application of the material at the rate of forty pounds per acre.

Two proprietary brands of iron chelates, sold under the trade names of Sequestrene NaFe and Ferro Green, have produced good results in correcting this deficiency.

CITRUS CULTURE.

The success of the programme designed at resuscitating citrus culture in the Colony, which has been in progress for the past eleven years, can now be assessed on the experience gained during that period. On the whole, considerable success has been achieved and in some respects, the aims of those who conceived the programme have been realized. However, time and accumulated experience have revealed not previously thought of problems, and complications have arisen which can only be solved by experimental work under the supervision of trained personnel.

The cost of services connected with citrus culture gradually increase as orchard plantings gain in maturity and the problems of control of plant diseases and pests have a habit of building up from year to year, consistent with the growth and stature of the trees. The cost of chemical control of plant diseases and pests of citrus trees, in the initial stages of growth appear trifling, but mounting cost from year to year becomes a drain on the resources of the grower beyond which the productivity can reimburse him. It is in this respect that the Department of Agriculture must conduct careful experiments aimed at supplimenting biological control for the more expensive form of chemical control which is ever a recurring expense.

It is interesting to report that better results have been achieved in citrus propagation during the last two years than has been the case in the past fifty years! For some unknown reason, budding as a means of increasing planting material has invariably been a dismal failure in Bermuda; it is, therefore, gratifying to note that the improved results in this direction may be the forerunner of a permanently more successful budding technique.

CONTROL OF ANIMAL DISEASES.

It is interesting to report that the incidence of tuberculosis in cattle in the Colony continues to decline. During the year of 1954, only a single foci of infection was found in one herd. In this instance, the dairy owner had unwisely introduced an untested cow into his herd without first consulting the Government Veterinary Officer, with the result that his previously clean herd was contaminated and the infection was communicated to four other susceptible animals.

FIELD INSPECTION OF SEED POTATOES IN CANADA.

Field inspection of seed potatoes in Canada was revived after a lapse of fourteen years. The Director of Agriculture and the Assistant Horticulturist visited the Maritime Provinces of Canada during July, and in cooperation with the Division of Plant Protection Science Service of the Canadian Department of Agriculture, inspected a number of plantings entered for certification in Nova Scotia, Prince Edward Island and New Brunswick.

The object of the mission was largely concerned with the inspection of the Bliss Triumph variety, which forms the most important segment of the Colony's two potato crops yearly. This variety is notably susceptible to the virus diseases of leaf roll and mosaic, and under the semi-tropical conditions of Bermuda it is frequently an unprofitable yielder.

While inspection at the source is effective in eliminating plantings showing obvious symptoms of virus diseases, the Bliss variety is notoriously unpredictable in this respect as very frequently mild mosaic plants suffer severely from wind injury under Bermuda conditions and consequently tuber yields are very seriously affected.

During the inspection tour in Canada, about twelve acres of Bliss seed was rejected for shipment to Bermuda because of the excessive mosaic it contained. Notwithstanding this, field readings in the fall crop in Bermuda, under somewhat unfavourable weather conditions, revealed an excessive amount of virus and consequently unprofitable yields.

Notwithstanding the fine quality of the Bliss Triumph variety and the popularity of its floury texture as a table potato, I think its cultivation should be drastically curtailed because of its susceptibility to virus diseases. This offsets its other good qualities to the detriment of the growers, who depend on results for their living rather than the popularity it has attained by the consuming public.

A relatively new variety, which closely resembles the Bliss in its eating properties, though of later maturity, is the Pontiac. I recommend that this variety should be grown experimentally with the view of eventually displacing the Bliss Triumph for commercial purposes.

FINANCE.

The statistics appended have been compiled from records kept at the Department of Agriculture.

It will be seen by Appendix "B" that the total allocation for 1954 was £163,328.0.0 of which £137,247.3.2 was expended. The Departmental receipts for the resale of vegetables and other public services rendered amounted to £41,666.18.4 (see Appendix "A"). If the receipts are deducted from the total expendature, it will be observed that the total operating cost of the Department of Agriculture for 1954 was £95,580.4.10.

IN RETROSPECT.

As this will be my last report before my retirement from the post of Director of Agriculture in April of 1955, I wish to review briefly the accomplishments of the Department of Agriculture during the period of my Directorship from 8th November 1948 to date. I assumed the Directorship of the Department of Agriculture at a time when farming in the Colony had reached the lowest ebb in its long history. The outbreak of the second world war had deprived the Colony of a sizable export market for Bermuda winter vegetables in Canada. Several ships of the Canadian National Steamships, which formerly transported the produce of Bermuda farms to the eastern seaboard of Canada, had become casualties of war and could not be replaced by new ones, leaving the farmers only a disorganized local market in which to sell their produce.

Planned Production and Marketing.

In an effort to stem the tide of unorganized production and marketing, a voluntary scheme of Planned Production and Marketing was introduced in the fall of 1949. Under this scheme, the Board of Agriculture guarantied prices for produce grown under contract, which paved the way for the orderly marketing of farm produce under Government supervision. The Government Marketing Centre, equipped with extensive refrigerating accommodation and other marketing facilities, became the wholesale distribution point for a substantial part of the farm produce raised in the Colony. It guarantied farmers participating in the scheme minimum prices, mutually agreed upon in advance, and the benefit of the market for any higher prices obtained through centralized marketing and control of market surpluses. The scheme also relieved the participating farmers of canvassing business, thus saving valuable time and effort which could be more profitably utilized in the production field. While the scheme has not solved all the difficulties of the farmers, it has, over the years, proved a stabilizing influence on the agricultural economy of the Colony, and the fact that it still continues to function in increasing volume is an indication of its usefulness in preventing over-production and the chaos which naturally follows unrestrained individual efforts.

The Cedar Infestation.

1948 will be remembered as the year when beautiful Bermuda was losing its loveliness to the greying influence of two scale insects, which were killing the native cedar, *Juniperus bermudiana*, by the thousands, leaving a trail of devastation in its wake to mar the landscape and to expose other vegetation to the full force of the elements. The two devastating scale insects, *Lepidosaphes newsteadi* Sulc. and *Carulaspis visci* Shrank., accidentally introduced into the Colony, had

found the native Bermuda cedars easy victims of their predatory habits and progressively the cedars in every Parish of the Colony became victims of the infestation. No such calamity has ever struck the Colony before and public opinion was clamouring for energetic action to combat the scourge which had descended upon the Island. The Board of Agriculture, under the leadership of Mr. H. St. George Butterfield and an energetic membership swung into action and called in specialists in the field of biological control, in an effort to stem the tide of the infestation. It was only after six years of painstaking effort to introduce parasites and predators from many parts of the world to combat the marauding insects, that any appreciable improvement in the health of the surviving cedars became discernable. Only during the last year has it been possible to analyse the end effects of the cedar infestation, and the final results present a grim picture of devastation which will not only incur a tremendous expense to repair, but years of unrelenting effort to remove and dispose of the dead cedars and to relandscape the land with other appropriate trees and shrubs.

APPRECIATION.

Both the Office and Field Staff of the Department discharged their duties with energy and satisfaction during the year, and I am grateful to them for their cooperation and devotion to their duties.

The cooperation of the Board of Agriculture during the year under review and indeed during the whole period of my Directorship may be described as a partnership of the highest order, and it is my ardent hope that the work accomplished and the unfinished projects will in the years to come reflect to the benefit of the community and become landmarks of progress in the agricultural and horticultural fields.

Respectfully submitted,

W. R. Evans

W. R. EVANS.
DIRECTOR OF AGRICULTURE

15th January, 1955.

APPENDIX "A".

SUMMARY OF RECEIPTS FOR YEAR 1954.

Vote 2 (a)	Packing House	£ 49.11. 6	
2 (b)	Marketing Centre	£ 33,737. 7. 9	
2 (c)	Citrus	£ 1,500. 0. 0	
2 (d)	Reafforestation	£ 2,870. 4. 2	
2 (e)	Other receipts	£ 3,509.14.11	£ 41,666.18. 4.

APPENDIX "B".

EXPENDITURE FOR PERIOD JANUARY 1ST TO DECEMBER 1954.

Vote	Services	Amount of Vote.	Expenditure	Balance lapsing
1	Fees to Members	£ 300.0.0	£ 71. 0. 0	£ 229. 0. 0
2-12	Salaries Est. Officers	10030.0.0	9792. 6. 8	237.13. 4
13-15	Salaries Non Est. "	2670.0.0	2150. 0. 0	520. 0. 0
16	Bonus to Est. Officers	942.0.0	873. 0. 8	68.19. 4
17	Bonus to Non Est. "	336.0.0	215. 0. 0	121. 0. 0
18	General Grant	5000.0.0	4950.11. 6	49. 8. 6
19	Control of Animal diseases & improve:of livestock	2000.0.0	944. 6.10	1055.13. 2
20	Control of plant diseases & pests	700.0.0	694.17. 3	5. 2. 9
21	Horticulture	3800.0.0	3578.17. 9	221. 2. 3
22	Government House gardens	3000.0.0	2969.15.10	30. 4. 2
23	Departmental contingencies	400.0.0	398. 1. 6	1.18. 6
24	Packing house supplies & marketing investigation	2000.0.0	1563. 5.11	436.14. 1
25	Cold storage plant operation	3500.0.0	2851. 1. 6	648.18. 6
26	Upkeep & operation of Agricultural equipment	3885.0.0	3566. 0. 9	318.19. 3
27.	Purchase of Agricultural machinery & equipment	1615.0.0	1487. 9. 8	127.10. 4
28	Purchase & storage of Agricultural supplies	600.0.0	245.18. 4	354. 1. 8
29	Purchase & storage of Potatoes & other Agri:produce for resale	50000.0.0	33726. 3. 9	16273.16. 3
30	Agricultural scholarships	400.0.0	15. 0	399. 5. 0
31	Agricultural Exhibitions	1500.0.0	62.17. 9	1437. 2. 3
32	Biological Control	6000.0.0	4344.11. 1	1655. 8.11
33	Reafforestation & Roadside Planting	60000.0.0	58683.13. 3	1316. 6. 9
34	Service to citrus growers	3000.0.0	2989. 5. 3	10.14. 9
35	Publications	400.0.0	96.10. 0	303.10. 0
36	Agricultural & horticultural extension work	500.0.0	315. 3. 3	184.16. 9
37	Maintenance of grounds of Sessions House and Secretariat	750.0.0	676. 9. 8	73.10. 4
		£ 163328.0.0	£137247. 3. 2	£ 26080.16.10

Appendix "C".

PRODUCTION OF GROUND CROPS, ANIMAL PRODUCTS AND LIVESTOCK POPULATION.

Crops.

A. Vegetables

Commodity	Area under crop. exp in acres	Avg. yield per acre in lbs	Total yield in lbs.	Unit value	Farm value
Beans	39	4,000	156 000	1s 6d	£11,200
Beets	24	8,000	192,000	7d	5,600
Broccoli	20	2,500	50,000	1s 6d	3 750
Cabbage	57	10,000	570,000	7d	16,625
Carrots	63	12,000	756,000	8d	25.200
Onions	15	10,000	150,000	8d	5,000
Potatoes, Irish	250	8,000	2,000,000	5d	41,666
Potatoes, Sweet	65	8,000	520,000	6d	13,000
Tomatoes	40	9,000	360,000	1s 4d	24,000
Miscellaneous	60	8,000	480,000	7d	14,000
Bananas	135	20,000	2,700,000	8d	90,000
	768		7,254,000		£ 250,041

B. Citrus

Area under cultivation in acres	No. of trees	Avg. yield per tree in dozens	Total yield in dozens	Unit value	Farm value
80	11,200	8	88,600	6/	£26,580

C. Lily Bulbs and Flowers

Area under cultivation in acres	No. of bulbs planted	No. of bulbs exported	Value	No. of boxes of flowers exported	Value
30	1,620,000	41,400	£2,070	11,302	£25,837

ANIMAL PRODUCTS

A. Milk

Total Production expressed in gallons	Value
600177	£157,544

B. Meat Products

Beef in lbs.	Value	Veal in lbs.	Value	Pork in lbs.	Value	Poultry in lbs	Value
100,500	£7,537	35,500	£2,612	390,000	£34,000	120,000	£24,000

C. Eggs

Expressed in dozens	Value
340,000	£102,000

LIVESTOCK POPULATION.

A.Dairy Animals

Cows	Heifers	Bulls	Total
1,220	170	21	1,411

B.Horses

Farm and Truck	Carriages	Race Horses	Total
60	30	50	140

C.Pigs

Sows	Boars	Store Pigs	Piglets	Total
310	50	450	750	1,500